Preface

Methods Memo No. 210: Updated Policy for LRFD Design
1 January 2009

Article 6.6 Piers in the LRFD Bridge Design Manual has been officially released with the January 1, 2009 Graphic Mail Release and with the release the Office of Bridges and Structures design policy has been updated:

1. All bridge projects started after October 1, 2007 will have the superstructures designed using the AASHTO LRFD Specifications 4th Edition / 2007.

2. With the release of Section 6.6 of the Bridge Design Manual [Pier Design – LRFD] the substructure units of bridge projects started after January 1, 2009 shall be designed using the LRFD specifications.

    a. The current J Standards (three span continuous concrete slab standards) superstructure and substructure are designed for LRFD and conform to this policy.

    b. The H Standards (three span prestressed beam standards) are designed LRFD for the superstructure and Standard Specifications (HS25 loading) for the substructure. If these standards are used, the substructure design will be considered acceptable with no redesign required. Plans are to update the substructure to LRFD in 2009.

    c. The current RS Standards (three span rolled steel beam standards) are designed to the Standard Specifications (HS20 Loading) for the superstructure and substructure. These standards have been removed from the Office of Bridges and Structures web site and will not be acceptable for new projects. Updating of these standards to LRFD design will be considered at a later date.

3. Exceptions to this policy will be considered based on development issues associated with the overall project. In general if preliminary design (completion of the TS&L) was done prior to October 2007, then the Standard Specifications may be used in final design.

4. Section 6.3 Drilled Shafts has not been updated to LRFD and drilled shaft designs will continue to be done by the Standard Specifications.

5. Repairs shall continue to follow MM No. 190 (LRFD Guidelines for Repair Projects).

6. Reinforced concrete box culverts and flumes will continue to be designed by the Standard Specifications until the culvert and flume standards are updated to LRFD.

7. Pile lengths may be designed by the Standards Specifications using the Foundation Soils Information Charts or by LRFD using the charts in article 6.2.7 of 6.2 Piles in the LRFD Bridge Design Manual. The design methods should give similar results for pile lengths. Designers are encouraged to calculate the pile lengths using both methods to verify the results.

If you have any questions please check with me.

FHWA LRFD Policy Memorandum and Attached Letter (Memorandum)

MEMORANDUM

Subject: **INFORMATION**: Clarification of LRFD Policy Memorandum

Date: January 22, 2007

From: */s/ Original Signed by*
M. Myint Lwin, P.E., S.E.
Director, Office of Bridge Technology

Reply to Attn of: HIBT-10

To: Directors of Field Services
Resource Center Director
Division Administrators
Federal Lands Highway Division Engineers

On June 28, 2000, FHWA issued a Policy Memorandum announcing its decision regarding a transition time frame for the use of Load and Resistance Factor Design (LRFD) for the design of new bridges on Federal-aid funded projects. According to the memo, all new bridges on which States initiate preliminary engineering after October 1, 2007, shall be designed by the AASHTO LRFD Bridge Design Specification. States unable to meet this date shall provide justification and a schedule, acceptable to the FHWA, to complete the transition.

The purpose of the memorandum herein is to provide FHWA Division Offices, States, and local governments with clarifications regarding FHWA's LRFD Policy Memorandum.

- The term "preliminary engineering" as stated in the LRFD Policy Memorandum shall be interpreted as the initiation of the studies or design activities related to identification of the type, size, and/or location of bridges. The term "initiate" means the date when Federal-aid funds are obligated for preliminary engineering. In cases where Federal-aid funds are not used in preliminary engineering, but are used in construction or other phases of the project, the term "initiate" means the date when the State obligates or expends their own funds for preliminary engineering.

- Superstructure, substructure, and foundation bridge elements shall be designed by LRFD.

- For modifications to existing structures, States have the option of using the LRFD Specifications or the specifications which were used for the original design.

- Shelved bridge projects designed and packaged for construction prior to October 1, 2007, are not subject to the LRFD Policy Memorandum, unless a redesign is required by the State after October 1, 2007.

- The term "new bridges" as stated in the LRFD Policy Memorandum shall be interpreted to include both new and total replacement bridges.

- Finally, the policy applies to all States-initiated Federal-aid funded projects, not just those funded with Highway Bridge Program funds, including on system and off-system projects.

If you have any questions, please feel free to contact Dr. Firas Sheikh Ibrahim at 202-366-4598, or Firas.Ibrahim@dot.gov.

Attachment: LRFD Policy Memorandum (See below.)

U.S. Department of
Transportation
Federal Highway
Administration

1200 New Jersey Avenue SE
Washington, D.C. 20590

June 28, 2000

Refer to: HIBT

David H. Pope, P.E.
Chairman, Highway Subcommittee on Bridges and Structures
Wyoming Department of Transportation
5300 Bishop Boulevard
Cheyenne, WY 82009-3340

Dear Mr. Pope:

Thank you for the letter of June 20, 2000. We appreciate receiving the advice and recommendation of the AASHTO Highway Subcommittee on Bridges and Structures and its member State bridge engineers on the time frame goals for the use of Load and Resistance Factor Design (LRFD) for the design of bridges. We concur in recommended time frames and would be pleased to work in partnership with the States to attain the listed four goals which, to repeat, are:

1. All new bridges on which States initiate preliminary engineering after October 1, 2007, shall be designed by the LRFD Specifications.

2. All new culverts, retaining walls, and other standard structures on which States initiate preliminary engineering after October 1, 2010, shall be designed by LRFD Specifications, with the assumption that the specifications and software for these structures are "mature" at this time.

3. States unable to meet these dates will provide justification and a schedule for completing the transition to LRFD.

4. For modifications to existing structures, States would have the option of using LRFD Specifications or the specifications which were used for the original design.

A copy of this letter and yours are being provided to the State bridge engineers and our FHWA field offices so that they are aware of FHWA's decision on this matter.

Sincerely yours,

/s/ original signed by
David H. Densmore
Director of Bridge Technology

Enclosure

Methods Memo No. 124: Design Manual Updates
29 June 2005

With updates in design policy and confusion of what the most up-to-date policies in the office are, the following procedure has been adopted for changing office policies and documenting the changes. If you have any questions please check with Dean Bierwagen or Ken Dunker.

1. As changes in policy are brought up, a draft methods memo is developed. The draft may be written by anyone in the office, but is usually drafted by the methods section.
2. The draft is presented to the policy group (Norm McDonald, Gary Novey, Ahmad Abu-Hawash, Gordy Port, Bill Tucker, John Neiderhiser, Ron Meyer, Ken Dunker, Mike Nop, and Dean Bierwagen).
3. Once the memo is agreed on by the Policy Group and all revisions have been made, the draft is turned in to Gary Novey.
4. Gary signs the memo and it is sent electronically to the Office of Bridges and Structures by Barb Johnsen and to the consultants by Jim Nelson.
5. The memo is also placed in the Design Manual (W:\Highway\Bridge\BridgeDesignManual) in the "Update Memo" file at the end of the most pertinent design section. For example, Methods Memo 105 (Use of Epoxy-Coated Reinforcing Steel) dated 3-28-05 was placed in section "6.8 Update Memos". All memos inside the file are listed in the "Table of Contents" at the beginning of the file.

Table of Contents

Methods Memos No.	**Date Issued**	**Subject**
91	3-24-05	Temporary Shoring Adjacent to Roadway
116	3-24-05	Correction to Figure 6.5.2.5 in 6.5 Abutments of the Bridge Design Manual
105	3-28-05	Use of Epoxy-Coated Reinforcing Steel

6. For the consultants, Annette places a copy in the "Policy and Procedures Section" of the Bridges and Structures web site.

   http://www.dot.state.ia.us/bridge/polframe.html

7. When the Design Manual sections are updated, new memos are written into the pertinent sections of the manual and a copy is placed in the commentary. When the updated sections are released, the changes for that release are shown and noted with a line in the margin. For example, the following update was made to steel section in its most recent release:

Flanges [AASHTO-I 10.48, 10.61]

The designer should attempt to use flange plates not exceeding a thickness of 2 inches (50 mm) because fabricators may have difficulty obtaining thicker plates [OBS MM No. 103]. If thicker plates are required due to excessive flange width, the office prefers plates not exceeding a thickness of 2.5 inches (63 mm), in order to avoid potential cracking and lamellar tearing. Flange width should be selected to the nearest whole inch (25 mm). Minimum top flange size is 12 inches by ¾ inch (300 mm by 19 mm), and the flange size shall meet all of the size and proportion rules for flexural members [AASHTO-I 10.48] and for constructibility [AASHTO-I 10.61].

8. The memos are then deleted from the "Update Memos" file.
9. If a new memo changes the policy of a previously released memo, the previously released memo will be updated in the commentary. For example, when the policy on camber calculations was

updated because of changes to the Leap program, the following the design manual commentary C5.4.1.4.1.4 was updated to show both memos and the comment **(Superseded by Methods Memo No. 97 on 21 May 2004)** was added to MM No. 83:

C5.4.1.4.1.4 Section properties

Methods Memo No. 97: Revision of MM No. 83 Camber Calculations Using Transformed Sections for Prestressed Beam Design
21 May 2004

The office has recently reviewed the camber values using the transformed section option on the updated ConSpan program, version 2.1.0 by Leap. Based on this review, the Office of Bridges and Structures feels that Leap has addressed the problem with the camber calculations. When using Conspan version 2.1.0 or later versions by Leap, the transformed section camber output shall be used. If you have any questions, please contact the Office of Bridges and Structures, Software Engineer.

Methods Memo No. 83: Camber Calculations Using Transformed Sections
11 April 2003 (Superseded by Methods Memo No. 97 on 21 May 2004)

It has been recently brought to my attention that the ConSpan program may not be calculating camber correctly for Prestressed Concrete beam designs that use the transformed section. In comparison runs that were made, there were large differences in release camber and erection camber using transformed section compared to runs using gross section. For example….

In summary, the most current information can be obtained by reviewing the pertinent section of the Design Manual, and then reviewing the corresponding "Update Memos" section for policy changes made after the most recent manual update. This procedure was adopted to make it easier for personnel to keep track of updates to office policy; however, personnel should make an effort to review memos and the updated sections of the manual as they are released to remain up-to-date on the changes in office policy.

Methods Memo No. 170: Design Policy Updates
24 July 2007

The Engineering Bureau Director asked that our office coordinate the release of information with the Office of Design in regard to design policy changes. Therefore starting August 1st, we will begin releasing the office's policy changes (Methods Memos) at the beginning of each month. Updates to the bridge design manual will still be made every 6 months.

As part of this coordination effort the department has subscribed to an internet e-mail service called "Graphicmail" for notifying consultants of policy and standards changes. Updates of methods memo and design manuals for Design and Bridges and Structures will be provided in a combined e-mail for the division through this service.

People in the DOT are encouraged to sign up for this service through the following web site:

www.graphicmail.com/rwcode/subscribe.asp?SiteID=17481&Mode=subscribe

A link is also provided from the Office of Bridges & Structures home page.

If you have any questions, please check with Annette Jeffers.

Appendix for obsolete and superseded memos

Methods Memo No. 184: Policy for LRFD Design
1 October 2007

The LRFD design policy for the Office of Bridges and Structures starting October 1st shall be as follows:

1. All bridge projects started after October 1, 2007 will have the superstructure designed using the AASHTO LRFD specifications.
2. Substructure units will be designed using HS25 loading (as noted in Methods Memo 157) or AASHTO LRFD Specifications. If the bridge layout (TS&L) [noted as the B01 date in the project scheduling system] was completed after October 1, 2007, the substructure shall be designed using AASHTO LRFD Specifications. If the bridge TS&L was developed prior to October 1, 2007, the substructure shall be designed using HS25 loading unless directed to use AASHTO LRFD Specifications by the Bridge Office Management.
3. Bridge projects that were designed based on the standard specification but were delayed will not have to be redesigned.
4. Reinforced concrete box culverts and flumes will be designed by the AASHTO Standard Specifications until the culvert standards are updated to LRFD.

The superstructure sections are available on the Office of Bridges and Structures' web site. The substructure sections will be released as completed. Draft substructure sections will be made available for use by the office on a case by case basis. Please check with me if you have any questions.